



HMJ7

High Dynamic Range FET Mixer

The Communications Edge™

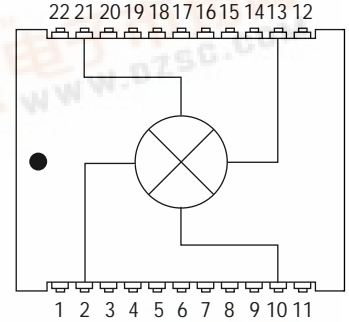
Product Features

- +34 dBm IIP3
- 60 dBc Spurious Rejection in IF Band
- RF 1000-2000 MHz
- LO 1000-2000 MHz
- IF 10-1000 MHz
- +21 dBm LO Drive Level
- +5V Bias (40 mA)
- Low Cost Surface Mount J-Lead Package

Product Description

The HMJ7 is a high dynamic range, GaAs FET mixer. This active broadband mixer realizes a typical third order intercept point of +34 dBm at an LO drive level of +21 dBm. The HMJ7 also provides excellent suppression of spurious intermodulation products, greater than 60 dBc. The HMJ7 comes in a low cost, J-Lead package. The combination of high dynamic range and spurious suppression, makes the HMJ7 an ideal choice for CATV headend transmission equipment and other applications requiring a broadband mixer in the 1000 MHz to 2000 MHz frequency range.

Functional Diagram



Function	Pin No.	Function	Pin No.
Ground	1	Ground	12
IF	2	LO	13
Ground	3-9	Ground	14-20
+5V DC	10	RF	21
Ground	11	Ground	22

Specifications

Parameter	Units	Minimum	Typical	Maximum	Condition
Frequency Range:					
RF	MHz	1000		2000	
LO	MHz	1000		2000	
IF	MHz	10		1000	
SSB Conversion Loss	dB		8.5	9.5	
Noise Figure	dB		10.5		
Isolation:					
LO-RF	dB	21	24		
LO-IF	dB	24	30		
RF-IF	dB		24		
IIP3	dBm	30	34		RF = 1018 MHz (0dBm)
Return Loss:					
RF Port	dB		10		
LO Port	dB		5		
IF Port	dB		14		
Spurious Rejection	dBc		60		
Input P1dB	dBm		23		
LO Drive Level	dBm		21		
DC Current at +5V Bias	mA		40	60	

Test conditions unless otherwise stated: RF = 1018 MHz (-10 dBm), LO = 1017 MHz (21 dBm), IF = 50-860 MHz and 25°C.

Absolute Maximum Ratings

Parameter	Rating
Operating Case Temperature	-40 to +85°C
Storage Temperature	-65 to +100°C
Maximum Input Power	25 dBm

1. Operation of this device above any of these parameters may cause permanent damage.
2. Total sum of LO port and RF port power should not exceed 25 dBm.

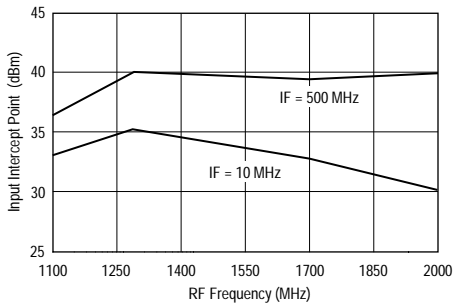
Ordering Information

Part No.	Description
HMJ7	High Dynamic Range FET Mixer (Available in tape and reel)
HMJ7-PCB	Fully Assembled Application Circuit

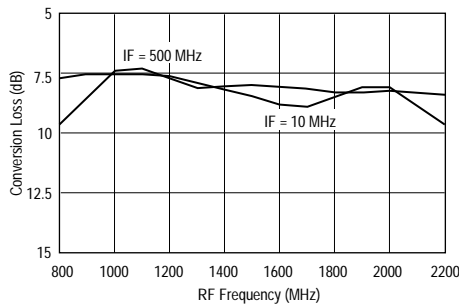


Performance Charts

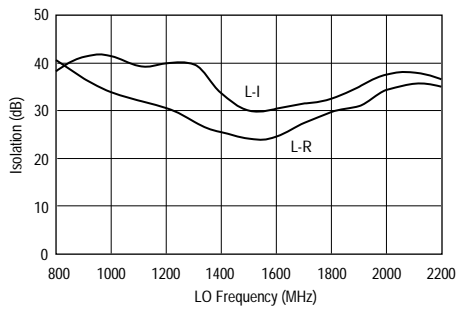
IIP3 vs. RF Frequency



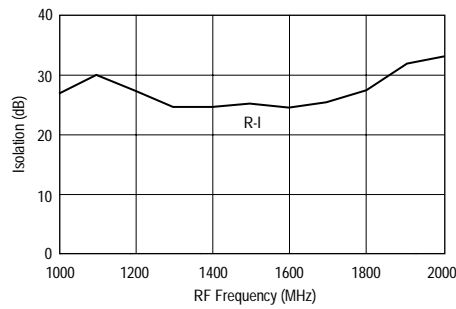
Conversion Loss vs. RF Frequency



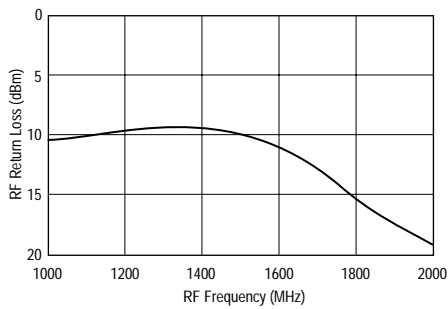
Isolation vs. LO Frequency



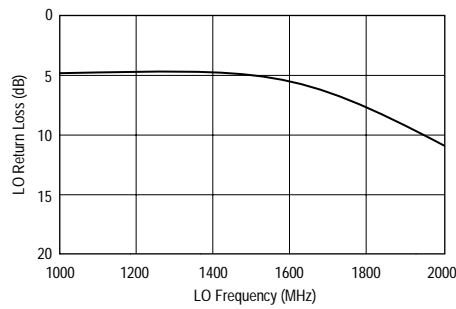
Isolation vs. RF Frequency



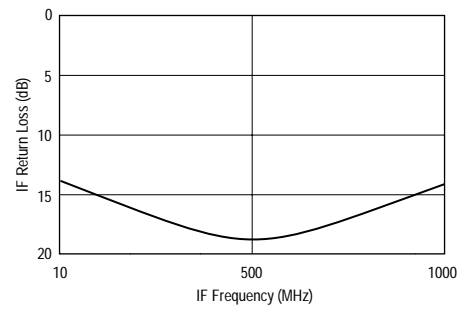
RF Return Loss vs. RF Frequency



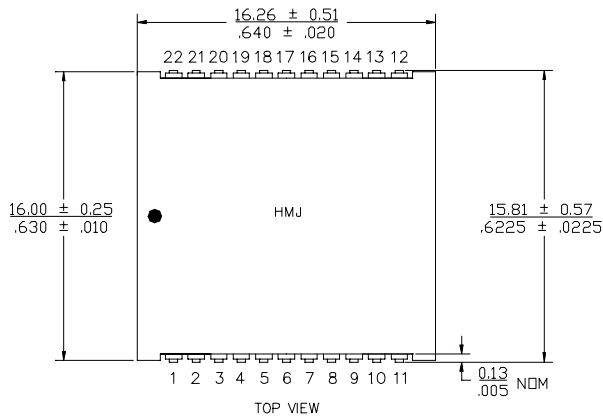
LO Return Loss vs. LO Frequency



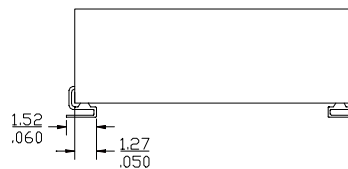
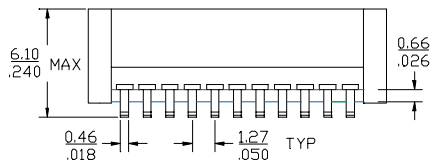
IF Return Loss vs. IF Frequency



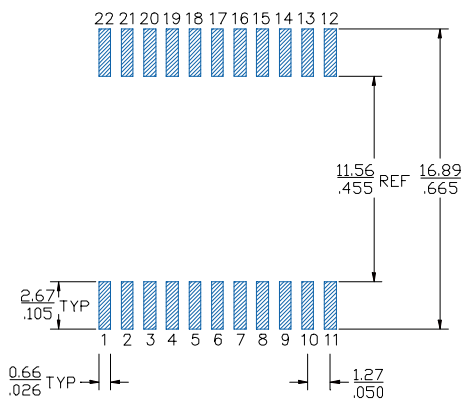
Outline Drawing



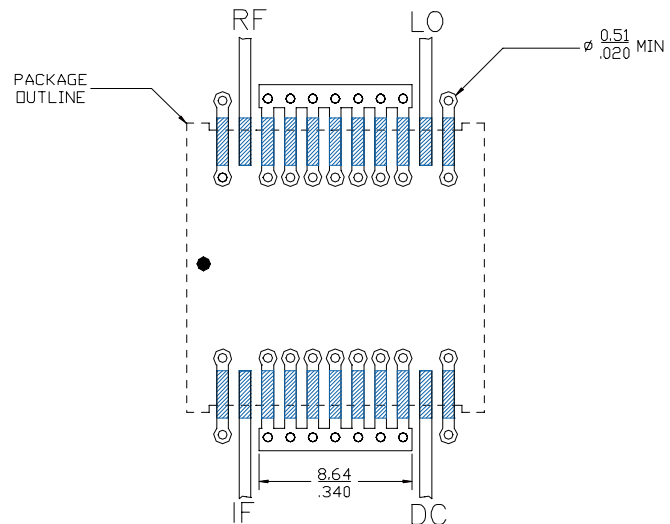
mm
inch



Land Pattern



Mounting Configuration



FUNCTION	PIN NO.	FUNCTION	PIN NO.
GROUND	1	GROUND	12
IF	2	LO	13
GROUND	3-9	GROUND	14-20
DC	10	RF	21
GROUND	11	GROUND	22

- Notes:
1. Ground vias are critical for thermal and RF grounding considerations.
 2. A minimum of 36 ground vias are required for 14 mil FR4 board.
 3. If your PCB design rules allow, ground vias should be placed under the land pattern for better RF and thermal performance. Otherwise ground vias should be placed as close to land pattern as possible.
 4. Trace width depends on PC board.



